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# Biotechnology Notes

Volume 2 • Number 9

U.S. Department of Agriculture

September 1989

*Biotechnology Notes*, a compilation of agency activities, news events, and upcoming meetings, is prepared for members of the U.S. Department of Agriculture's (USDA) Committee on Biotechnology in Agriculture (CBA) by USDA's Office of Agricultural Biotechnology (OAB).

## INSIDE USDA

### PLANT FIELD TESTS NOW DOT THE COUNTRYSIDE

All across America from the Eastern Shore of Maryland to a remote acre of land in northern California, scientists are conducting controlled field tests of genetically engineered plants. Typically, such tests begin in the spring and continue until early fall. All of them — 48 at last count — were approved by the Animal and Plant Health Inspection Service's (APHIS) Biotechnology, Biologics, and Environmental Protection unit to ensure agricultural safety and to review other impacts on the environment.

The types of plants being field tested are as varied as the locales. There is alfalfa in Iowa and Minnesota, cucumbers in New York, potatoes in Idaho, tobacco in California and Wisconsin, tomatoes in Illinois, cotton in Mississippi, and soybeans in Arkansas, to name just a few. For the most part, the plants were genetically modified to induce either herbicide, insect, or disease resistance.

Initial results from the field tests conducted two years ago when APHIS regulations went into effect show very promising results. But more research on additional plots appears to be necessary before any product is ready for commercialization. Also, the Environmental Protection Agency and the Food and Drug Administration may need to conduct their own reviews to be sure each product is safe for human and animal consumption. While these and other issues still lie ahead, the future of agricultural biotechnology keeps getting closer all the time.

For a quick scan of the products and locations of plant field tests, please turn to page 7.

### LEANER LIVESTOCK THRU BIOTECH

Changing the fat-to-lean ratio of pigs and other livestock has important benefits for producers as well as consumers concerned about controlling their intake of fat and cholesterol. Several new technologies have recently emerged in this area, including the use of growth hormones that require less feed and experimentation with transgenic animals. These approaches and other aspects of producing leaner animals are the focus of a study being conducted by a committee of the American Society of Animal Science.



The committee is chaired by Norman Steele, Agricultural Research Service research leader in the Non-Ruminant Nutrition Laboratory, and includes John McClelland, an agricultural economist with the Economic Research Service (ERS). Following peer review, the results of the study will appear as a supplement to the journal Animal Science. Publication is scheduled for next year.

#### SEPTEMBER ABRAC MEETING CANCELLED

The meeting of USDA's Agricultural Biotechnology Research Advisory Committee (ABRAC), originally scheduled for September 21-22, has been cancelled. Additional data is being gathered and analyzed on several topics -- transgenic fish research and the draft research guidelines -- and this information will be ready for ABRAC review at the next meeting to be held January 11-12, 1990.

#### USDA PUBLICATION WINS NATIONAL AWARD

Biotechnology Notes, prepared by USDA's Office of Agricultural Biotechnology (OAB), won a first place in this year's "Blue Pencil" awards sponsored by the National Association of Government Communicators. Now in its 27th year, the awards competition recognizes "outstanding government communication projects and their producers." The competition is open to communicators in the Federal, State, and local sectors as well as those in the private sector who have completed work for government communicators. Judges evaluate 15 categories of entries based on writing, editorial content, layout and design, and cost-effectiveness. In addition to the Blue Pencil competition, NAGC also sponsors the annual "Gold Screen" awards for outstanding audiovisual productions. To learn more about NAGC, or the Blue Pencil and Gold Screen competitions, call 703-823-4821.

#### USDA BIDS "ADIOS" TO BIOTECH EXHIBIT

USDA's new exhibit, which uses photographs to tell the story of biotechnology, will soon be on its way to Santiago, Chile for an international agricultural and commercial fair scheduled for three weeks beginning in late September. The event is sponsored by the Chilean National Farmer's Association and attracts between three million and five million visitors. The 8' x 10' exhibit has been displayed at scientific symposia and industry conferences both in the United States and Europe.

Along with the exhibit, USDA will provide fact sheets explaining the role of USDA agencies now involved in biotechnology and a videotape prepared by the Extension Service. The coordination, preparation, and delivery of the materials are being handled by the OAB, the Foreign Agricultural Service's (FAS) agricultural attache in Santiago, the Agricultural Research Service's Information Staff, and the Office of Information, Design Division. In addition to the biotechnology display, the FAS will have a booth that promotes the export of U.S. agricultural commodities.

#### AS EASY AS 1-2-3

That's how USDA's new biotechnology electronic bulletin board is described in the brochure "NBIAP Agricultural/Environmental Biotechnology Bulletin Board." A service

of Virginia Polytechnic Institute and State University, with support from the Cooperative State Research Service (CSRS), the bulletin board combines a news report/forum/information exchange component with direct access to 14 databases. It was established by USDA's National Biological Impact Assessment Program (NBIAP) and seeks to further NBIAP's goal of facilitating the safe testing of genetically modified organisms in the environment. The service is available 24 hours a day, seven days a week, and is free via computer modem. To log on, dial 800-NBIAPBD (800-624-2723).

### NEWS AROUND THE COUNTRY (AND THE WORLD)

#### **MORE STATES ENACTING BIOTECH LAWS**

Sixteen biotech initiatives have been enacted by states as of August 1, according to the latest survey released by the Industrial Biotechnology Association (IBA). Eleven of these laws were enacted in the 3-month period beginning May 1, 1989. The survey, State Government Legislation on Biotechnology, says legislation is also pending in 29 states. The report breaks down the legislation into eight categories: DNA fingerprinting, state-funded programs, medical research, advisory/study commission, fetal research, environmental release, tax incentives, and bovine somatotropin. More states have introduced or enacted laws pertaining to DNA fingerprinting -- 11 -- than in any other category. Nine states have bills pertaining to environmental release. To receive a copy of the survey, which includes summaries and the status of all bills, call the IBA at 202-857-0244.

#### **BIOPULPING: USING FUNGUS TO MAKE PAPER**

Over 65 million tons of paper and paperboard products are produced annually in the United States. At least 90% of production involves some use of chemicals that may produce toxic waste products. Mechanical pulping methods, although free of toxic chemical byproducts, require large amounts of energy to produce and result in paper that lacks strength. By combining biopulping methods -- using fungi to make pulp from wood chips -- with one or both of these other methods, some of these problems may be solved.

Exploring such possibilities is the goal of the Biopulping Consortium, a coalition of 17 pulp and paper-related companies, the University of Wisconsin Biotechnology Center, the USDA's Forest Products Laboratory, and the University of Wisconsin at Madison. The Consortium's 5-year research program is studying the potential of using fungi to "soften" wood chips prior to mechanical pulping.

Because biopulping is a new field, scientists are conducting basic research identifying the best organisms, characterizing their essential enzymes, selecting improved strains, and developing an overall biopulping process. So far, the coalition has identified strains of fungi that preferentially degrade lignin. A preliminary analysis of the biopulping process indicates that with fungal pretreatment the energy required to grind wood to pulp can drop 25% or more.

To learn more about biopulping or the Consortium, call the University of Wisconsin Biotechnology Center at 608-262-4652.



## WEST GERMANY DEBATES PUBLIC'S ROLE

The degree of public involvement to be allowed in West Germany's newly drafted biotechnology legislation is an issue now being debated. According to the August 2 issue of Chemical Week, the environment minister and some "opposition parties" propose public involvement at each stage of the permit process. On the other hand, the industry and some other ministers prefer to limit the public's role. The legislation covers containment measures and waste-water treatment of four categories of organisms that range from E. coli to viruses and other organisms. The new law is scheduled to become effective in 1991.

## WHAT'S A MARKETING PLAN?

If you don't know and you're thinking about starting a biotech business, look into a new masters degree program in biotechnology management starting this fall at the University of Maryland. It is designed for both scientists and executives of young, growing companies, as well as scientists at larger firms who may wish to move up the corporate ladder.

One course covers the early history, modern developments and ethical issues of biotechnology. The role of government regulatory agencies in the research, development, and commercialization of biotechnology products is also required. Other subjects include planning and organizing biotech ventures; needs assessment, recruiting, marketing, capital requirements, managing public awareness; forming international ventures; and technology forecasting and assessment as applied to selecting and evaluating biotech projects. To receive a degree, students must complete 36 credit hours, including an applied problem-solving management project and pass an oral exam.

## IN CASE YOU WEREN'T THERE

- Alvin Young, Director of OAB, was invited by the University of Wyoming to present a public seminar, August 9, on **"The Challenges of Agricultural Biotechnology."** Young described USDA's role in biotechnology, highlighting the Department's research, regulatory, and educational activities. He explained how biotechnology may offer alternatives to the use of chemical pesticides by incorporating insect-resistance into a plant's genome. Young also focused on the importance of public support for biotechnology and the need to do a better job of educating young people in the sciences.
- North Carolina's **new legislation** regulating the introduction of genetically engineered organisms into the environment was the topic of a press conference held August 10 in Washington, D.C. Panelists included Rebecca Goldberg, Environmental Defense Fund; Richard Herrett, ICI Americas; Loy Newby, CIBA-GEIGY; and William Hancock, former North Carolina State Senator and former chairman of the North Carolina Biotechnology Center. The moderator was Bruce Mackler, General Council for the Association of Biotechnology Companies.

Each panelist "applauded" the efforts of North Carolina's Advisory Committee on Biotechnology in Agriculture, which voted that State legislation was needed. Herrett said the bill is "consistent with Federal regulations" and could serve as a model

for other States considering biotech legislation. In his closing remarks, Mackler added he hoped the bill removed some of the "regulatory uncertainties" expressed by the citizens and that biotech can only prosper and flourish in a "stable and predictable environment."

- On August 11, David MacKenzie, Director of CSRS's NBIAP, presented a seminar at ERS on "A Science-Based Bio-Safety **Information Network.**" MacKenzie discussed an on-line system to assist principal investigators in preparing applications for field testing. (See brochure listed under New Publications.) He also talked about the role of economists in risk assessment and biotechnology regulatory issues.
- A round-table discussion on the basic research needed to support biological control of plant diseases was held at the National Academy of Sciences (NAS) August 25. Members of the Committee on Biological Control Research Needs and Priorities in **Plant-Microbe Interactions** in Agriculture discussed a newly released report, "The Ecology of Plant-Associated Microorganisms." Both the workshop and the final report were supported by USDA's Cooperative State Research Service, Office of Competitive Research Grants; the National Science Foundation; and the American Phytopathological Society. The report evaluates the basic research and funding requirements related to the biological control of plant pathogens. At the meeting, participants said biocontrol offers an alternative to the use of chemicals and toxic pesticides. The end result would be a technology that is safe, that works, and has the public's confidence. However, it was said that biocontrol agents do not always work, which is why more research is needed to understand the relationship between plant-associated microorganisms and pathogens. To receive a copy of the report, call Clifford Gabriel at NAS on 202-334-2233.

#### NEW PUBLICATIONS

- "Technology: Are We Running Out of Steam?" describes the global prospects for new technologies, particularly biotechnologies. Written by Mary Knudson and Margot Anderson. The article appears in a special issue of ERS's World Agriculture Situation and Outlook Report that asks the question, "Are We Approaching a World Food Crisis Again?" (WAS-55, June 1989.) Call 1-800-999-6779 to receive a copy.
- "International Technology Transfer in Agriculture." Margot Anderson examines international research and patent activity and economic issues surrounding technology transfer. (AIB-571.) Call 1-800-999-6779 to receive a copy.
- "NBIAP Agricultural/Environmental Biotechnology Bulletin Board." A brochure that describes a new computerized source of information on agricultural biotechnology. (See news item "As Easy as 1-2-3" above.) For a free copy, call Pam Love at 202-382-1533.

#### UPCOMING MEETINGS

Sept. 13-15: Paine Webber Biotechnology Conference: Biopharmaceuticals 1989. San Diego, Calif. Call 212-477-9600.



Sept. 14-17: Fifth International Fallen Leaf Lake Conference. Molecular Biology of Plant Pathogenic Bacteria. South Lake Tahoe, Calif. Call 916-752-0300.

Sept. 21: "Patents and Regulation of Animals and Plant Biotechnology," is the topic of the next breakfast meeting of Montgomery County, Md.'s High-Tech Council. Guest speaker is Kevin O'Connor, U.S. Office of Technology Assessment. Gaithersburg, Md. For reservations, call 301-762-6325 by September 15.

Sept. 24-26: The Third Annual Iowa Biotechnology Showcase. Iowa City and Ames, Iowa. For details, write to Sheila Langdon, Showcase Coordinator, Iowa Dept. of Economic Development, 200 East Grand Ave., Des Moines, Iowa 50309.

Sept. 26: "Biotechnology, Insects and Society: In Perspective." Sponsored by the University of Wisconsin Department of Entomology. Madison, Wisc. Alvin Young, OAB Director, joins other panelists to discuss the use of biotechnology in insect pest management and the development of scientific theory and public policy. For details, call the University at 608-262-0625 or 608-262-3227.

Sept. 28: Third Forum for Applied Biotechnology. Ghent, Belgium. For details, write to P. Tavernier, Administrative Centre FAB, c/o GOM West Vlaanderen, Baron Ruzettelaan 33, B-8320 Brugge, Belgium.

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Oct. 2-4: Biotech USA. San Francisco, Calif. Sponsored by Bio/Technology. Write to Conference Management Corp., 200 Connecticut Ave., Norwalk, Conn. 06854, or call 800-243-3238 ext. 232.

Oct. 6: Meeting of the National Institute's of Health Recombinant DNA Advisory Committee. The meeting takes place in Building 31, Conference Room 6 at NIH, 9000 Rockville Pike, Bethesda, Md. 20892. For more information, call 301-496-9838.

Oct. 10-12: Second International Symposium on Biotechnology and Food Safety. College Park, Md. Call 301-454-6056.

Oct. 11-13: The Eighth Annual Meeting of the Industrial Biotechnology Association. "Biotechnology's Focus in the 1990's." Washington, D.C. For details, call the Association at 202-857-0244.

Oct. 15-19: Workshop on Woody Plant Biotechnology. Sponsored by the International Union of Forestry Research Organizations and co-sponsored by the Somatic Cell Genetics Working Party of the NATO Advanced Research Workshop on Woody Plant Biotechnology. Located at the USDA Forest Service's Institute of Forest Genetics, Placerville, Calif. For details, call David Neale at 415-486-3688.

Oct. 17-19: Biotechnica '89: The Fifth International Congress and Exhibition for Biotechnology. Hannover, West Germany. Write to Hannover Fairs USA, 103 Carnegie Center, Princeton, N.J. 08540.

Oct. 28-Nov. 2: Annual meeting of the U.S. Animal Health Association. Las Vegas, Nev. The Association's Committee on Biotechnology will present about six scientific papers and Terry Medley, APHIS, will discuss biotechnology regulations. For more information, call Ella Blanton at 804-266-3275.



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Biotechnology Notes is written and edited by Marti Asner, a public affairs specialist in USDA's Office of Agricultural Biotechnology. Suggestions for items to include in future issues are always appreciated and may be sent to USDA/OAB, Room 321-A, Administration Bldg., 14th and Independence Ave., S.W., Washington, D.C. 20250; or call 202-447-9165.

